



# MINERAL INFORMATION SERVICE

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MINERAL INFORMATION SERVICE is a monthly news release concerning the mineral resources and industry of CALIFORNIA, designed to inform the public of the discoveries, operations, markets, statistics, and new publications. It is distributed without cost upon request.

## MINERAL RESOURCES OF THE SAN FRANCISCO AREA

The San Francisco area, lacking both the gold mines that first called attention to California's mineral resources and the oil fields that today yield approximately 80 percent of the state's total mineral production, is not commonly thought of as a mining region. Yet 10 miles south of San Jose is the New Almaden quicksilver mine whose total production is nearly \$50 million--the largest of any mine in California. Before petroleum was available in quantity, about 1900, coal valued at over 16 million dollars was mined from the Mount Diablo and Corral Hollow fields, and today the Rio Vista gas field furnishes a significant portion of the natural gas consumed in the San Francisco area. Structural materials and industrial minerals, unglamorous but vital to the modern economy, comprise the most important mineral resources of the San Francisco area. The plant of the Permanente Cement Company, with a capacity of 7 million barrels a year, is the largest in the western states. In 1953 the area's production of crushed stone, sand, and gravel was valued at over 10 million dollars. Red burning clays for structural products exist in large quantities, while the sea yields common salt, magnesia, bromine, and gypsum.

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One of San Francisco area's mineral processing plants. Here slag is being removed from a ladle of molten steel at the Pittsburg plant, Columbia Steel.



Wollastonite is used as a flux in coated electrodes for welding. Here hard-facing material is being applied.

## WOLLASTONITE

Wollastonite, a calcium metasilicate ( $\text{CaO} \cdot \text{SiO}_2$ ) with a theoretical chemical composition of 48.3 percent  $\text{CaO}$  and 51.7 percent  $\text{SiO}_2$ , is a new mineral in the nonmetallic field. It has many applications in the ceramic industry, in the chemical industry, as a nonmetallic filler, and as high grade electrical insulators. Although very large deposits of wollastonite exist in California, in 1954 no continuous mining operations had developed.

### Mineralogy and properties.

Wollastonite is triclinic and is nearly identical in physical properties with parawollastonite, which is monoclinic. It fuses at  $1540^\circ \text{C}$ . after inversion at  $1150^\circ \text{C}$ . to pseudowollastonite which is pseudohexagonal and probably monoclinic. Some mineralogists refer to the low temperature form as beta wollastonite and the high temperature form as alpha wollastonite.

Wollastonite can, and commonly does, contain up to several percent manganese, iron, or magnesium oxides. It has a hardness of 4.5 to 5 on Moh's